IC 22-10-6

Chapter 6. Explosives and Blasting

IC 22-10-6-1

Storage; separate surface magazines; standards; requirements; restrictions

Sec. 1. (a) Separate surface magazines shall be provided for the storage of explosives, detonators, and blasting heater elements.

(b) Surface magazines for storing and distributing explosives in amounts exceeding one hundred twenty-five (125) pounds shall be as follows:

(1) Reasonably bulletproof and constructed of incombustible material or covered with fire-resistant material. The roofs of magazines so located that it is impossible to fire bullets directly through the roof from the ground need not be bulletproof, but where it is possible to fire bullets directly through them, roofs shall be made bullet-resistant by material construction, or by a ceiling that forms a tray containing not less than a four (4) inch thickness of sand, or by other methods.

(2) Provided with doors constructed of three-eighths (3/8) inch steel plate lined with a two (2) inch thickness of wood, or the equivalent.

(3) Provided with dry floors made of wood or other nonsparking material and have no metal exposed inside the magazine.

(4) Provided with suitable warning signs so located that a bullet passing directly through the face of a sign will not strike the magazine.

(5) Provided with properly screened ventilators.

(6) Equipped with no openings except for entrance and ventilation.

(7) Kept locked securely when unattended.

(c) Surface magazines for storing detonators need not be bulletproof, but they shall be in accordance with other provisions for storing explosives.

(d) Explosives in amounts of one hundred twenty-five (125) pounds or less or five thousand (5,000) detonators or less shall be stored in accordance with preceding standards or in separate locked box-type magazines. Box-type magazines may also be used as distributing magazines when quantities do not exceed those mentioned. Box-type magazines shall be constructed strongly of two (2) inch hardwood or the equivalent. Metal magazines shall be lined with nonsparking material. No magazine shall be placed in a building containing oil, grease, gasoline, waste paper, or other highly flammable material, nor shall a magazine be placed less than twenty (20) feet from a stove, furnace, open fire, or flame.

(e) The location of magazine shall not be less than two hundred (200) feet from any mine opening, occupied building, or public road. Where compliance with this provision is not practicable, the magazine shall be effectively barricaded.

(f) The supply kept in distribution magazines shall be limited to

approximately one (1) day's requirements, and such supplies of explosives and detonators may be distributed from the same magazine, if separated by at least a four (4) inch substantially fastened hardwood partition or the equivalent.

(g) The area surrounding magazines for not less than twenty-five (25) feet in all directions shall be kept free of rubbish, dry grass, or other materials of a combustible nature.

(h) If the explosives magazine is illuminated electrically, the lamps shall be of vapor-proof type, installed and wired so as to present minimum fire and contact hazards.

(i) Only nonmetallic tools shall be used for opening wooden containers. Extraneous materials shall not be stored in an explosives, detonator, or blasting heater-element magazine.

(j) Smoking, carrying smokers' articles, or open flame shall be prohibited in or near any magazine.

(k) Cardox may not be used in an underground mine.

(Formerly: Acts 1955, c.168, s.40.) As amended by P.L.243-1987, SEC.3.

IC 22-10-6-2 Repealed

(*Repealed by P.L.243-1987, SEC.14.)*

IC 22-10-6-3

Underground transportation

Sec. 3. (a) Explosives or detonators carried anywhere underground by anyone shall be in containers constructed substantially of nonconductive material, maintained in good condition, and kept closed.

(b) When explosives or detonators are transported underground in cars moved by means of a locomotive or rope, or in shuttle cars, they shall be in substantial covered cars or in special substantial covered containers used specifically for transporting detonators or explosives. In addition, the following provisions apply:

(1) The bodies and covers of such cars and containers shall be constructed or lined with nonconductive material.

(2) If explosives and detonators are hauled in the same explosives car or in the same special container, they shall be separated by at least a four (4) inch substantially fastened hardwood partition or the equivalent.

(3) Explosives, detonators, or other explosive items shall not be transported on the same trip with persons.

(4) When explosives or detonators are transported in special cars or containers in cars, they shall be hauled in special trips not connected to any other trip. However, additional cars as needed may be used to lower a rope trip, or to haul supplies including timbers if the materials transported do not project above the top of the car. Exposed highly flammable materials such as oil or grease shall not be hauled on the same trip with explosives.

(5) Explosives or detonators shall not be hauled into or out of

a mine within five (5) minutes preceding or following a man-trip or any other trip.

(c) Explosives and detonators shall be transported underground by belt only under the following conditions:

(1) In the original and unopened case, in special closed cases constructed of nonconductive material, or in suitable individual containers.

(2) Clearance requirements shall be the same as those for transporting persons on belts.

(3) Suitable loading and unloading stations shall be provided.

(4) Stop controls shall be provided at loading and unloading points, and an attendant shall supervise the loading and unloading of explosives and detonators.

(d) Neither explosives nor detonators shall be transported on flight or shaking conveyors, scrapers, mechanical loading machines, locomotives, cutting machines, drill trucks, or any self-propelled mobile equipment. However, this does not prohibit the transportation of explosives or detonators in special closed containers.

(Formerly: Acts 1955, c.168, s.42.) As amended by P.L.243-1987, SEC.4.

IC 22-10-6-4

Underground storage; containers

Sec. 4. (A) When supplies of explosives and detonators for use in one (1) or more sections are stored underground, they shall be kept in section boxes or magazines of substantial construction with no metal exposed on the inside, located at least 25 feet from roadways and power wires, and in a reasonably dry, well rock-dusted location protected from falls of roof.

(B) When explosives or detonators are stored in the section, they shall be kept preferably in separate boxes or magazines not less than 5 feet apart; if kept in the same box or magazine, they shall be separated by at least a 4-inch substantially fastened hardwood partition or the equivalent. Not more than a 48-hour supply of explosives or detonators shall be stored underground in such boxes or magazines.

(C) Explosives and detonators stored near the working faces shall be in separate closed containers, and shall be in a location out of line of blast not less than 50 feet from the face and 15 feet from any pipe line, power line, rail or conveyor; except that if kept in niches in the rib, the distance from pipe line, power line, rail or conveyor shall be at least 5 feet. Such explosives and detonators, when stored, shall be separated by a distance of at least 5 feet.

(D) Explosives and detonators shall be kept in their containers until immediately before use at the working faces.

(E) Only nonmetallic tools shall be used for opening wooden explosives containers. Tools or other materials shall not be stored with explosives or detonators.

(Formerly: Acts 1955, c.168, s.43.)

IC 22-10-6-5

Black blasting powder and explosives; underground storage, use, and handling

Sec. 5. (a) Black blasting powder shall not be stored, handled, or used underground in a mine.

(b) All explosives used underground in coal mines shall be of the permissible type and shall be used as follows:

(1) Fired only with electric detonators of proper strength.

(2) Fired with permissible shot-firing units or fired by other devices permitted by the United States Mine Safety and Health Administration, unless firing is done from the surface when all persons are out of the mine. Shots may be fired with a nonpermissible shot-firing unit with persons in the mine but not in by the last open cross-cut provided an application has been filed with and approved by the director. Such application must include the following:

(A) The name and address of the mine.

(B) The active workings in the mine in which such units will be used and the approximate number of shots to be fired.

(C) The period during which such units are to be used.

(D) The nature of the development or construction for which they will be used, e.g., overcasts, undercasts, track grading, roof brushing, or boomholes.

(E) A plan, proposed by the operator designed to protect miners in the mine from the hazards of methane and other explosive gases during each multiple shot, e.g., changes in the mine ventilation system, provisions for auxiliary ventilation and any other safeguards necessary to minimize such hazards.

(F) A statement of the specific hazards anticipated by the operator in blasting for overcasts, undercasts, track grading, brushing of roof, boomholes, or other unusual blasting situations such as coalbeds of abnormal thickness.

(G) The method to be employed in the use of nonpermissible shot-firing units to avoid the dangers anticipated during development or construction which will ensure the protection of life and the prevention of injuries to the miners exposed to such underground blasting.

(3) Where the coal is cut, shots shall not be fired if the blast hole is drilled beyond the limits of the cut.

(4) Boreholes shall be cleaned, and they shall be checked by the shot-firer to see that they are placed properly and are of correct depth, in relation to the cut, before being charged. Improperly drilled holes shall not be charged.

(5) All blasting charges in coal shall have a burden of at least eighteen (18) inches in all directions if the height of the coal permits.

(6) Boreholes shall be stemmed with at least twenty-four (24) inches of incombustible material, or at least one-half (1/2) of the length of the hole shall be stemmed if the hole is less than

four (4) feet in depth, unless other permissible stemming devices or methods are used.

(7) Shots shall not be fired in any place where methane can be detected with a methane detector approved by the United States Mine Safety and Health Administration or a flame safety lamp when tested at a point not less than twelve (12) inches from roof, face, and rib.

(8) Charges exceeding one and one-half (1 1/2) pounds, but not exceeding three (3) pounds, shall be used only if boreholes are six (6) feet or more in depth, the explosives are charged in a continuous train, with no cartridges deliberately deformed or crushed, with all cartridges in contact with each other, and with the end cartridge touching the back of the hole and the stemming respectively, and Class A or Class B permissible explosives are used. However, the three (3) pound limit does not apply to solid rock work.

(9) Boreholes shall not be charged while any other work is being done at the face, and the shot or shots shall be fired before any other work is done in the zone of danger from blasting, except that which is necessary to safeguard the employees.

(10) Only nonmetallic tamping bars shall be used for charging and tamping boreholes. This does not prohibit the use of a nonmetallic tamping bar with a nonsparking metallic scraper on one (1) end.

(11) The leg wires of electric detonators shall be kept shunted until ready to connect to the firing cable.

(12) Shots shall not be fired from the power or signal circuit while any persons are in the mine.

(13) The roof and ribs of working places shall be tested before and after firing each shot or group of multiple shots.

(14) Ample warning shall be given before shots are fired, and care shall be taken to ascertain that all persons are in the clear. Persons shall be removed from adjoining working places when there is danger of a shot blowing through.

(15) Mixed types or brands of explosives shall not be charged or fired in any borehole.

(16) Shots shall be prepared and fired by certified shot firers.

(17) Except for mudcaps (adobes) approved by the federal Mine Safety and Health Administration, mudcaps (adobes) or other unconfined shots shall not be fired underground in a mine.

(Formerly: Acts 1955, c.168, s.44.) As amended by P.L.231-1983, SEC.12; P.L.243-1987, SEC.5; P.L.165-1997, SEC.5.

IC 22-10-6-5.5

(*Repealed by Acts 1979, P.L.231, SEC.30.)*

IC 22-10-6-6

Blasting cables; standards

Sec. 6. (A) Blasting cables shall be:

(1) Well insulated and as long as may be necessary to permit the shot firer to get in a safe place around a corner.

(2) Short-circuited at the battery end until ready to attach to the blasting unit.

(3) Staggered as to length or the ends kept well separated when attached to the detonator leg wires.

(4) Kept clear of power wires and all other possible sources of active or stray electric current.

(Formerly: Acts 1955, c.168, s.45.)

IC 22-10-6-7

Electric detonators; misfiring; waiting period

Sec. 7. (A) Where misfires occur with electric detonators, a waiting period of at least 5 minutes shall elapse before anyone returns to the shot. After such failures, the blasting cable shall be disconnected from the source of power and the battery ends short-circuited before electric connections are examined.

(B) Explosives shall be removed by firing a separate charge at least 2 feet away from, and parallel to, the misfired charge or by washing the stemming and the charge from the borehole with water, or by inserting and firing a new primer after the stemming has been washed out. Misfires shall be removed promptly and before any other work is done in such place.

(C) A very careful search of the working place, and, if necessary, of the coal after it reaches the tipple shall be made after blasting a misfired hole, to recover any undetonated explosive.

(D) The handling of a misfired shot shall be done by a certified shot firer.

(Formerly: Acts 1955, c.168, s.46.)

IC 22-10-6-8

Repealed

(*Repealed by P.L.243-1987, SEC.14.)*

IC 22-10-6-9

Compressed air; blasting with compressed air

Sec. 9. (A) Where compressed air is used for blasting or breaking down the coal, the following shall apply:

(1) Air lines shall be tested to withstand an approximate pressure of 20,000 pounds per square inch.

(2) Air lines shall be grounded at the compressor and, if possible, at other low-resistance ground connections along the lines, such as at borehole casings. They shall not be connected in any way to tracks, water lines, or other electric power return conductors and shall be suitably insulated where they cross electric wires or underneath the track.

(3) Shut-off valves shall be installed every 1,000 feet in all compressed-air blasting lines and in all branch lines at a point near the main lines.

(4) Compressed-air blasting lines shall be protected at places

where equipment passes over, under, or adjacent to them.

(5) Steel, copper, or other lines shall not be handled or repaired when air pressure is in the line.

(6) Air lines shall be examined periodically for kinks or other weaknesses and replaced immediately when defects are found.

(7) Tubing shall be coiled and uncoiled properly. The part of the tubing that is affected by frequent coiling and uncoiling shall be renewed periodically.

(8) Blow-down valves shall not be less than 45 feet from the face and shall be around a right angle.

(9) Holes for compressed-air tubes shall be within the limits of the cut, and compressed-air devices shall not be used in improperly drilled holes.

(10) When blow-down valves are open to discharge the tube, they shall remain open until time to place the tube in the next borehole.

(11) After breaking down the coal in any one (1) place, the tube shall be disconnected at once from the air line and not reconnected until ready to be used in the next place.

(12) When a differential pressure-type tube fails to discharge, the line leading to the tube shall be disconnected at the blow-down valve, and the tube shall be dragged by means of the line to an inactive place, marked with warning signs, and left 1 hour before any repair work is done thereon.

(13) All persons shall be removed from adjoining working places where there is danger of breaking through and shall be at a safe distance around a right angle while coal breaking is in progress.

(14) Breaking coal with compressed air shall be done by certified shot firers.

(Formerly: Acts 1955, c.168, s.48.)